

Aulanko by one having ordinary skill in the art upon reviewing Mato. Applicants respectfully traverse this rejection.

Aulanko discloses a traction sheave elevator and a machine space for the traction sheave elevator. Referring to Fig. 4, the device of Aulanko includes an elevator cage 101 in an elevator shaft 117 that is supported by a rope 103. The rope 103 supports the elevator cage 101 in its ascension and decension within the elevator shaft 117. The rope 103 is driven by an actuating device 106 through a driving sheave 107. The driving section 106 and the sheave 107 are located on an inner wall of the elevator shaft 117 adjacent a top floor of a building.

Mato discloses a driving device for a home elevator including a speed reducer 20. Referring to Figs. 1 and 2, the speed reducer 20 is driven by a motor 1 and outputs a reduced rotational speed to a wire drum 30 around which a rope 34 for an elevator is wrapped. The speed reducer 20 and drum 30 are supported by a support block 5. The motor 1 includes an output shaft 2, a rotor 3, and a stator 4. The rotor 3 is secured to the output shaft 2 by a rotary disk 9 that includes a web positioned on an opposite side of the stator 4 from the support block 5.

The present invention is directed to an elevator apparatus including a drive sheave that is adjacent a side of an elevator cage when the elevator cage is positioned at a top floor of a building. Referring to Figs. 1-2(b), the elevator apparatus includes a drive sheave 27 that drives a rope to move the elevator cage 52 within the elevator shaft. The drive sheave 27 is driven by a driving section, which includes a speed reducer 20, a motor assembly 10, an input shaft 21 and a supporting member 22. The motor assembly 10 includes a rotary disk 15 that extends radially from the input shaft 21. The supporting member 22 is positioned in facing relationship to a radial web of the rotary disk 15. The supporting member 22 supports the speed reducer 20.

Amended claim 1 recites, *inter alia*, an actuating device including a sheave... a driving section for rotating said sheave, said driving section including a speed-reducer, a motor assembly, an input shaft and a supporting member, the motor assembly including a rotary disk extending radially... the supporting member positioned in facing relationship to a radial web of the rotary disk, the supporting member supporting the speed reducer.

Applicants respectfully submit that even if one having ordinary skill in the art were to modify the Aulanko elevator device to include a speed reducer, as is disclosed in Mato, the combined device would not disclose each and every element of amended claim 1. Specifically, the combination would not disclose an elevator apparatus that includes a supporting member that is positioned in facing relationship to a radial web of a rotary disk of a motor, wherein the supporting member supports a speed reducer. One having ordinary skill in the art modifying Aulanko to include a speed reducer as is disclosed in Mato would insert the speed reducer shown in Mato with the disk 9 having a web on an opposite side of the stator 4 from the support block 5 and not in facing relationship to the support block as is claimed in amended claim 1 of the present application. Therefore, Applicants respectfully submit that even if the combination of Aulanko and Mato were proper, each of the elements of amended claim 1 is not disclosed by the combination of Aulanko in view of Mato.

In addition, one having ordinary skill in the art would not modify Aulanko in view of Mato to include a driving section having a rotary disk with a radial web that is positioned in facing relationship to a supporting member of a speed reducer. Specifically, the supporting block of Mato supports both the speed reducer and the stator of the motor by extending through an inside diameter of the stator and around the output shaft 2. Because of this configuration of the supporting block, one having ordinary skill in the art would not modify the disk 9 of Mato such that its radial web was on an opposite side of the stator in facing relationship to the supporting block 5. In fact, one having ordinary skill in the art would realize that if the radial web of the disk were shifted to an opposite side of the stator the supporting block would have to be cut or the disk would not be attached to the rotating shaft, which would defeat the purpose of the disk driving the shaft. Accordingly, one having ordinary skill in the art would not make such a modification of the speed reducer of Mato.

Further, there is no motivation for one having ordinary skill in the art to modify Aulanko in view of Mato to include a rotary disk with a web positioned in facing relationship to a supporting member of a speed reducer, as is claimed in claim 1 of the present application. The only motivation to position a web of a rotary disk in facing relationship to a support member of a speed reducer is in the present application. Therefore, only improper hindsight would motivate one having ordinary skill in the art to make such a modification to the device of Mato.

In view of each of the above arguments, Applicants respectfully request that the Examiner reconsider and withdraw any rejection of amended claim 1 based upon unpatentability over Aulanko in view of Mato.

Claims 2, 3, 5 and 6 are dependent upon amended claim 1. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw any rejection of claims 2, 3, 5 and 6 based upon unpatentability over Aulanko in view of Mato, based upon the same arguments outlined above and directed to amended claim 1.

Mato in view of Aulanko or Beaulieu

The Examiner rejected claims 1-3, 5 and 6 under 35 U.S. C. § 103(a) as being unpatentable over Mato in view of Aulanko or UK Patent Application No. 2 201 657 A (“Beaulieu”). The Examiner argues that Mato discloses each of the elements of claim 1 except for an elevator apparatus with its drive assembly installed in a machine room provided on a top floor of a building such that its sheave rotation surface is positioned opposite a side of the elevator cage when the cage is at a top floor of the building. The Examiner further argues that it would have been obvious to one having ordinary skill in the art to modify the device of Mato such that its rotating sheave face is positioned opposite a side of an elevator cage when the cage is on the top floor of the building in view of Aulanko or Beaulieu. Applicants respectfully traverse this rejection.

Beaulieu discloses an elevator car 10 that is driven within an elevator shaft 12 by a rope 22 actuated by a motor 18. The rope 22 is driven by a sheave 20 whose rotary face is positioned adjacent a side of the elevator car 10 when the elevator car 10 is positioned at a top floor 16 of a building. Beaulieu does not disclose a speed reducer, a disk extending radially from a shaft of the motor or a web of the disk positioned in facing relationship to a speed reducer support.

Applicants respectfully submit that the combination of Mato in view of Aulanko or Beaulieu does disclose each and every element of amended claim 1. One having ordinary skill in the art would not modify Mato in view of Aulanko or Beaulieu to include each of the elements of amended claim 1. Further, there is no motivation for one having ordinary skill in the

art to modify Mato in view of Aulanko or Beaulieu to include each of the elements of amended claim 1. Applicants respectfully submit that the inclusion of Beaulieu into the combined device of Mato in view of Aulanko does not change any of the arguments presented above and directed to why amended claim 1 is patentable over a combined Aulanko in view of Mato device.

Therefore, in view of each of the above arguments directed to why amended claim 1 is patentable over the combined device of Aulanko in view of Mato, Applicants respectfully submit that amended claim 1 is also patentable over the combined device of Mato in view of Aulanko or Beaulieu. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw any rejection of amended claim 1, based upon unpatentability over Mato in view of Aulanko or Beaulieu.

Claims 2, 3, 5 and 6 are dependent upon amended claim 1. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw any rejection of claims 2, 3, 5 and 6 based upon unpatentability over Mato in view of Aulanko or Beaulieu, based upon the same arguments directed to amended claim 1.

Mato in view of Aulanko or Beaulieu and further in view of Hakala

The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Mato in view of Aulanko or Beaulieu and further in view of U.S. Patent No. 5,469,937 (“Hakala”). The Examiner argues that Mato in view of Aulanko or Beaulieu discloses each of the elements of claim 4 except for a brake located radially inwardly of the motor. The Examiner further argues that it would be obvious to one having ordinary skill in the art to modify the combined device of Mato in view Aulanko or Beaulieu with the device of Hakala to include a brake that is located radially inwardly of an elevator driving motor.

Hakala discloses a traction sheave elevator with a drive machine positioned at a base of an elevator shaft to drive the rope that supports the elevator within the elevator shaft. Hakala does not disclose a speed reducer or a support for the speed reducer that is in facing relationship to a web of a rotary disk of a motor.

As was discussed above, Applicants have amended claim 1 to include the limitation that the elevator apparatus includes a driving section with a rotary disk having a radial

web that is positioned in facing relationship to a supporting member of a speed reducer. Applicants respectfully submit that it would not be obvious to one having ordinary skill in the art to modify Mato in view of Aulanko or Beaulieu with the device disclosed in Hakala to include this amended claim 1 limitation for the same reasons outlined above. Claim 4 is dependent upon amended claim 1. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 4 as being unpatentable over Mato in view of Aulanko or Beaulieu and further in view of Hakala for the same reasons outlined above for amended claim 1 and based upon the dependence of claim 4 upon amended claim 1.

CONCLUSION

In view of the foregoing Amendment and remarks, Applicants respectfully submit that the present application, including claims 1-6, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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Enclosure

MARKED-UP VERSION OF CLAIM

The following is a Marked-Up Version of Claim wherein underlining indicates additions and bracketing indicates deletions.

1. (Amended) An elevator apparatus comprising:

an actuating device including a sheave around which a rope engaged with an ascending and descending cage is wound, said sheave being adapted to rotate thereby to move said rope with its rotation[.];

a driving section for rotating said sheave, said driving section including a speed-reducer, a motor assembly, an input shaft and a supporting member, the motor assembly including a rotary disc extending radially, a rotor being fixed to an outer circumference of the rotary disc, the input shaft fixed to a central portion of the rotary disc, the input shaft being rotationally driven by the motor assembly, the supporting member positioned in facing relationship to a radial web of the rotary disc, the supporting member supporting the speed reducer;

wherein said actuating device is installed in a machine room provided on a top floor of a building in which said ascending and descending cage is disposed, said machine room is adjacent an elevator passage for said cage and a rotation surface of said sheave is generally perpendicular to an axis of rotation of said sheave and opposed to a side of said cage when said cage is positioned at said top floor.